Operative Treatment of Acute Unstable Chest Wall Injuries Does Not Reduce In-Hospital Opioid Requirements

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Purpose: A previous randomized clinical trial evaluating operative versus nonoperative treatment of acute unstable chest wall injuries revealed more ventilator free days in operatively treated patients who were ventilated at the time of randomization. Our goal was to perform a secondary analysis to evaluate pain, and post-injury opioid requirements of operatively and non-operatively treated unstable chest wall injuries.

Methods: Data from a previous multicenter prospective randomized clinical trial conducted from 2011-2019 were analyzed. Patients sustaining acute, unstable chest wall injuries were randomized to operative or nonoperative treatment. In-hospital pain medication logs were evaluated and daily morphine milligram equivalents (MME) were calculated. MME were compared between the 2 treatment groups. A linear mixed model analyzed the MME over time between the 2 groups for hospital days 1 through 14. A multiple linear regression analysis was then performed to determine variables associated with patient's average MME/day while in hospital. Variables analyzed included treatment group, ISS, GCS (Glasgow Coma Scale) at randomization, ventilation status at randomization, epidural, ICU length of stay and number of surgeries in the first 28 days.

Results: 207 patients were randomized in the original trial—99 patients to nonoperative treatment and 108 to operative treatment. MME data were available for 200 patients. There was no evidence of a difference in pain medication usage between the 2 groups at any of the time points examined (P = 0.477). More patients in the operative group used a patient-controlled analgesia pump (55.8% [58/104] vs 37.5% (36/96), P = 0.007). The results of the regression analysis revealed that none of the examined variables were associated with average MME per patient/day (all P values >0.05).

Conclusion: This secondary analysis of a previous randomized clinical trial suggests that operative treatment of patients with unstable chest wall injuries does not decrease in-hospital daily opioid requirements. Further work is needed to identify factors that are associated with increase in pain and opioid requirements.